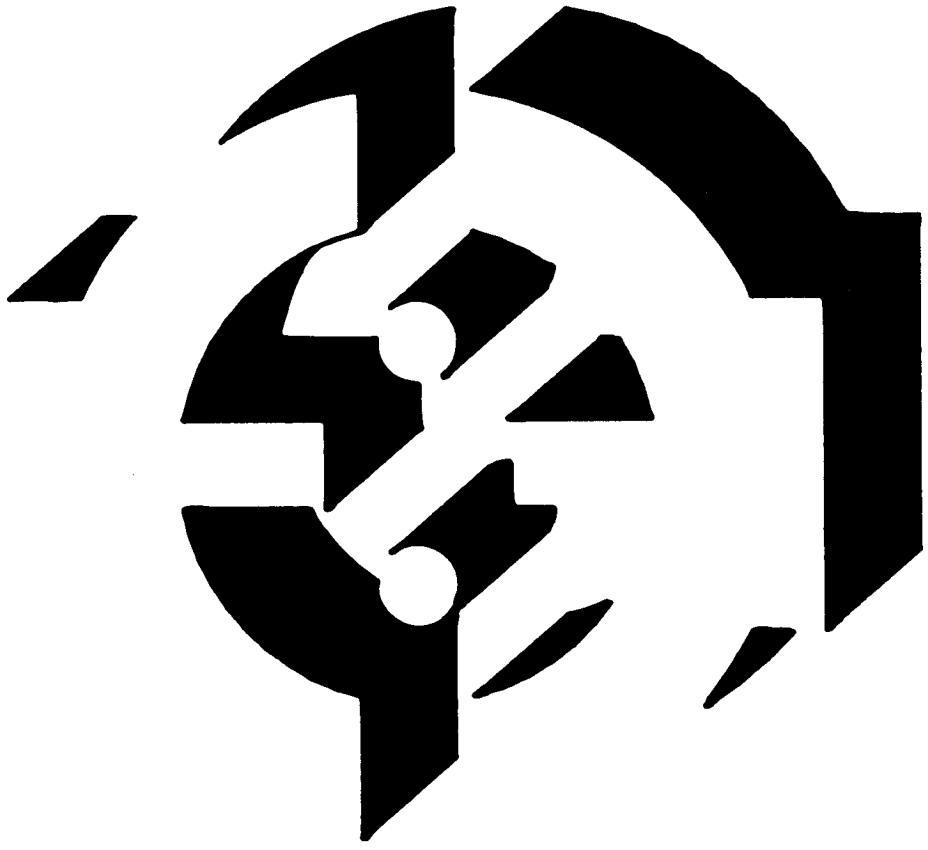
PRICE $10.00

COUNTERPOINT SA-2(



THE OWNER'S MANUAL

THANK YOU

Judging from the stereo equipment you own, you rank among discriminating music listen
You are probably no beginner when it comes to high fidelity equipment. Nevertheless, we
ask you to read and carefully follow these instructions to insure a successful partnership
between you and your new SA-20 Amplifier.

You now own a superb piece of high fidelity equipment. Used properly you are in for
thousands of hours of musical enjoyment.

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INTRODUCTION

1. The SA-20 uses eight 125 Watt Metal-Oxide Semiconductor Field Effect Transistors (MOSFETS) per channel. MOSFETS are easy to drive, extremely reliable and, unlike any other solid-state amplification device, have transfer characteristics similar enough to vacuum tubes to permit their use in the power stage of a high-quality music amplifier.

2. All voltage amplification and output stage drivers are vacuum tube circuits for maximum sonic accuracy and signal purity.

3. "Constant-Current-Source" loaded cathode-follower in the driver stage. This technology maintains much better linearity (lower distortion) than the simpler resistively-loaded cathode follower.

4. The output stage is not included in the feedback loop. This design approach allows the amplifier to drive any type of load, without fear of loop-induced oscillations irrespective of its inductive reactance characteristics. In addition, at Counterpoint, we have determined that a circuit designed to operate properly without feedback always results in a sound that preserves the natural harmonic series and dynamic impact of real music.

5. "Star" grounding and careful power supply decoupling assure maximum inter-and intrachannel separation.

6. Automatic muting to protect valuable loudspeakers during warm-up and in the event of any interruption of the AC power. This muting action in no way damages the sonic integrity of the amplifier, since the muting relay contacts are not in the signal path. Rather, they clamp the MOSFETs to ground, and thus eliminate the possibility of any output current flowing.

The SA-20 uses the best components available for each application. Audio and power supply circuitry use German Roderstein "RESISTA" 1% metal film resistors, precision Metal-Oxide power resistors, and metalized Polypropylene capacitors. The circuit board consists of FR-4 epoxy laminate with heavy two-ounce copper cladding.

GETTING YOUR SA-20 "ON THE AIR" QUICKLY

Step 1.

After unpacking the SA-20, you should save all the packing materials. They are essential f shipping purposes should updating, repair or resale be desired. If you have no room for storage at your residence, then store the box at a friend's house or alternatively, cover it wi floral contact paper to make an attractive end table or firkin.

Step 2.

Be sure you have re-installed the tubes. See *"Checking the Tubes, the First Step."*.

Step 3.

Place the SA-20 as near to the final installation position as possible (*See "Locating The SA-20 and Cooling Considerdations"* if you are planning to install it in a cabinet), leaving yourself access to its rear panel input and output connectors.

Step 4.

Check that the front panel POWER switch is in the ***OFF*** position.

Step 5.

Insert the AC power cord of your SA-20 firmly into a convenient wall outlet. Without connecting any other equipment to the amplifier, turn it **ON** by switching the POWER switc to the ***ON*** position. The indicator lamp in the on the faceplate of the SA-20 will illuminate RED. If the LED does not illuminate, there may be a problem with that unit. But before yo contact your dealer, please check that the AC receptacle actually has poewr by plugging a lamp into the receptacle (Yeah, we know this sounds dumb, but we've had calls from customers who've forgotten that the outlet was connected to a wall switch). If you are unable to find the problem, unplug the power cord and contact your Counterpoint Dealer.

Step 6.

Return the front panel POWER switch to the ***OFF*** position.

Step 7.

Be certain that your SA-20 is *OFF* **BEFORE** fussing around with its cables. Connect your signal sources: Connect the main output from your preamplifier into the input jacks of the SA-20 amplifier.

Step 8.

Connecting your speaker cables: Connect the speaker cables from the speaker terminal posts of the SA-20 amplifier to your loudspeakers. If you are using two SA-20's in the Bridged Mono Mode, see *"Getting More Power"* for connection instructions.

Step 9. **Turning it all on.**

Double check your connections to be certain that none of them are loose.

- Check to be certain that your preamplifier's volume control is fully counter-clockwise.
- Turn on your SA-20 Amplifier by placing the ON/OFF switch in the ***ON*** position.
- The lamp will remain RED for about 90 seconds while all the voltages within the SA-20 settle.
- At the completion of the warm-up process, the lamp will change from RED to a rich wonderful GREEN color. This means ***GO***. Turn ON the remaining units in your system.
- Advance the preamp's **"VOLUME CONTROL"** knob to listen to the music.

INSTALLING THE SA-20

Checking the Tubes, the First Step

Before operating your SA-20, we strongly recommend that you inspect the tubes for shipping damage. Checking the tubes in the SA-20 is a five-part process:

1. Removing the top cover from the SA-20,
2. Removal of one tube at a time from its existing tube socket,
3. Inspect the tube for damage,
4. Re-install the tube into the correct socket in your SA-20,
5. Re-installing the top cover.

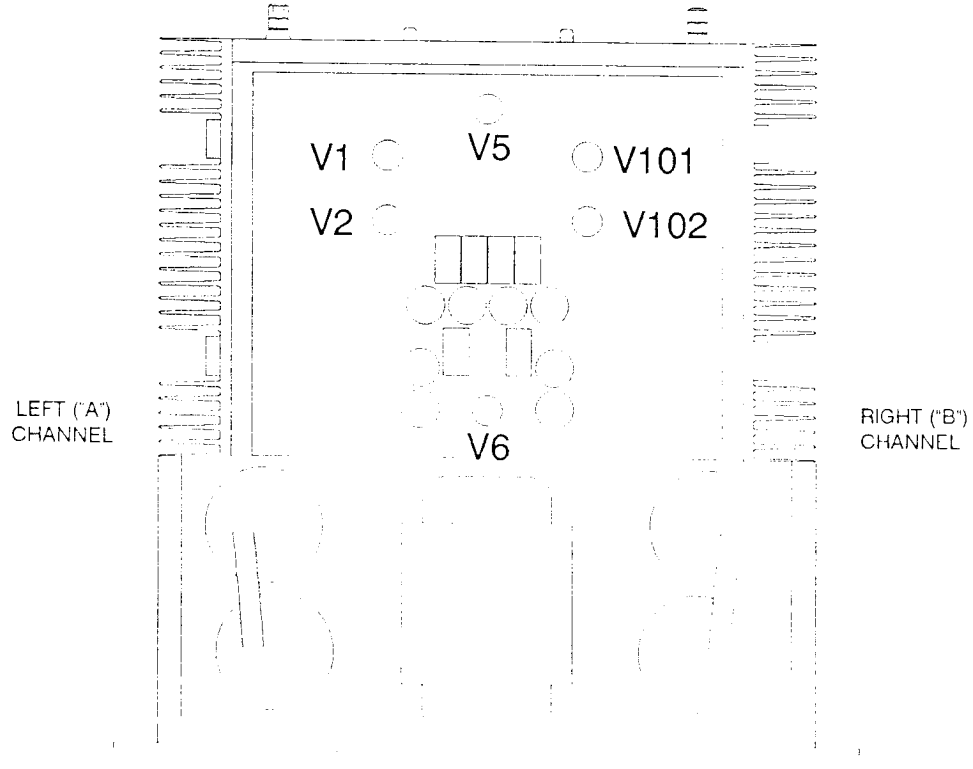
Step 1. **Removal of your SA-20's Top Cover.**

Before you can check the tubes, the top cover of your SA-20 will need to come off. Use a flat blade screwdriver or (better yet) a nut driver, and be careful not to slip and scar the metalwork.Never, ever fuss around inside your SA-20 with it connected to the household A mains. ***The voltages inside are HIGH and can be lethal!***

Step 2. **Locating the Tubes.**

The following tubes have been included with your SA-20:

- Five 6DJ8 tubes in tube sockets. The circuit board is marked V1, V2, V101, V102, V5.
- One 6CA4 rectifier tube in the tube socket marked V6.



Step 3. **Inspecting the Tubes.**

Remove tube V1 from its socket and look at it. The appearance of a white powdery coati inside the glass indicates that the bottle is broken. Do not use this tube. Contact your dealer for another. Be careful to check that the tube's pins are straight. Re-install V1, usi caution, as there is only one correct way that a tube will fit into the socket. Repeat this process for the other five tubes.

Step 4. **Closing the Top Cover.**

After you've inspected all the tubes you should replace the top cover (be careful with that screwdriver!).

Locating Your SA-20 And Cooling Considerations

Two important factors must be considered when selecting the location for your Counterpoint SA-20: Sufficient clearance for ventilation and proximity to other associated products.

Cooling Considerations.

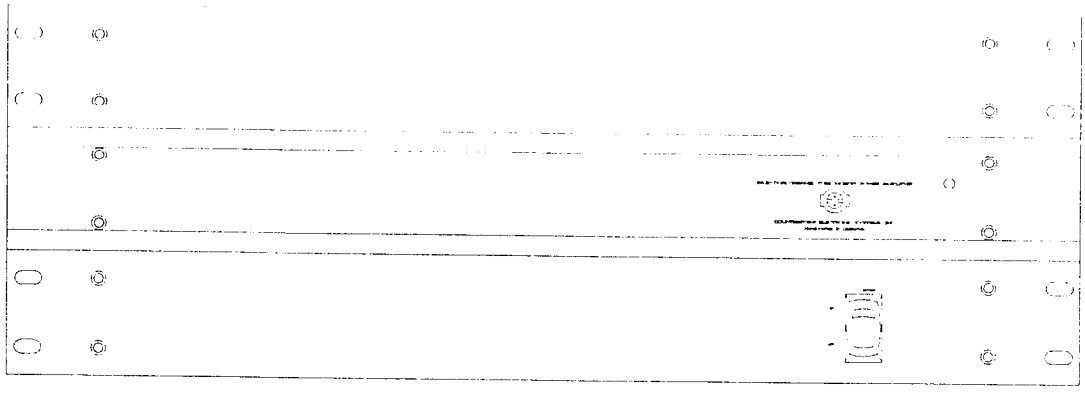
If your amplifier is to be enclosed in any sort of cabinet or rack, that enclosure should have adequate openings to insure that the amplifier will not recirculate heated air. The feet provided on the SA-20's bottom will allow adequate clearance beneath for proper air circulation. *Allow at least 4 inches of unobstructed space above the chassis to effectively dissipate sufficient heat during normal operation of SA-20. The enclosure needs to have either an open back or front or both. Never place your SA-20 on carpeting or other soft surfaces which may block the air slots on the bottom of the unit between the heatsink and the chassis.*

NOTE TO INSTALLERS: Anything that reduces the natural chimney-effect of the SA-20's thermal design will cause premature aging and failure of the unit. Forced-air can be used; design the cooling so that cool (room temperature) air is pulled into the bottom of the SA- and vertically along the heatsinks. Do not allow the heated air to recirculate. Both heatsink the SA-20 get very hot. The heatsinks are used to dissipate heat from the power applied t the MOSFET's on the output channels. Be certain that both heatsinks are adequately ventilated.

NEVER SUBJECT YOUR SA-20 TO MECHANICAL JARRING OR SHOCKS WHILE IT IS PLUGGED IN!

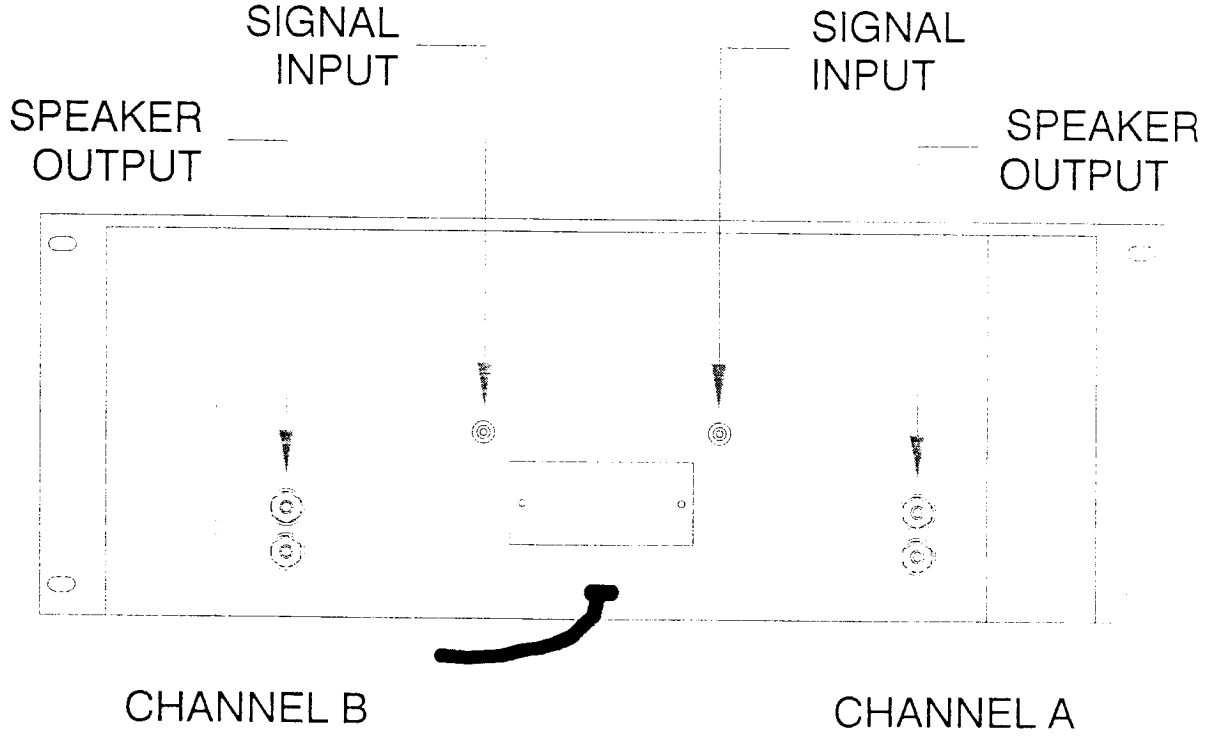
FAMILIARIZING YOURSELF WITH THE SA-20

Front Panel Description



Power Switch. This switch is used to turn the SA-20 ON and OFF.

Rear Panel Description



Signal Inputs. Connect your audio amplifier, or crossover (if used), to these inputs.

Speaker Connectors. Connect your speaker to the large red and black binding posts. The SA-20 does not invert signal polarity.

BREAK-IN AND WARM-UP PERIODS

Your new SA-20 has already been on for over 100 hours while it was burning-in at the factory. Even so, like all high quality audio components, it will require several hours of actually playing music before it sounds its best. Each time you turn on your SA-20, it will be ready to play music once the 90 second initializing period is over, but it has not really settled into its final, optimum, condition until at least 30 minutes have passed. This is a side effect of some very long time constants in the circuitry.

GETTING MORE POWER

Bridged Mono Operation.

Two SA-20 stereo amplifiers can be converted into two mono amplifiers for more power. Converting to bridged (mono) operation is simple. The following procedure will describe the method:

Step 1. Turn off your SA-20.

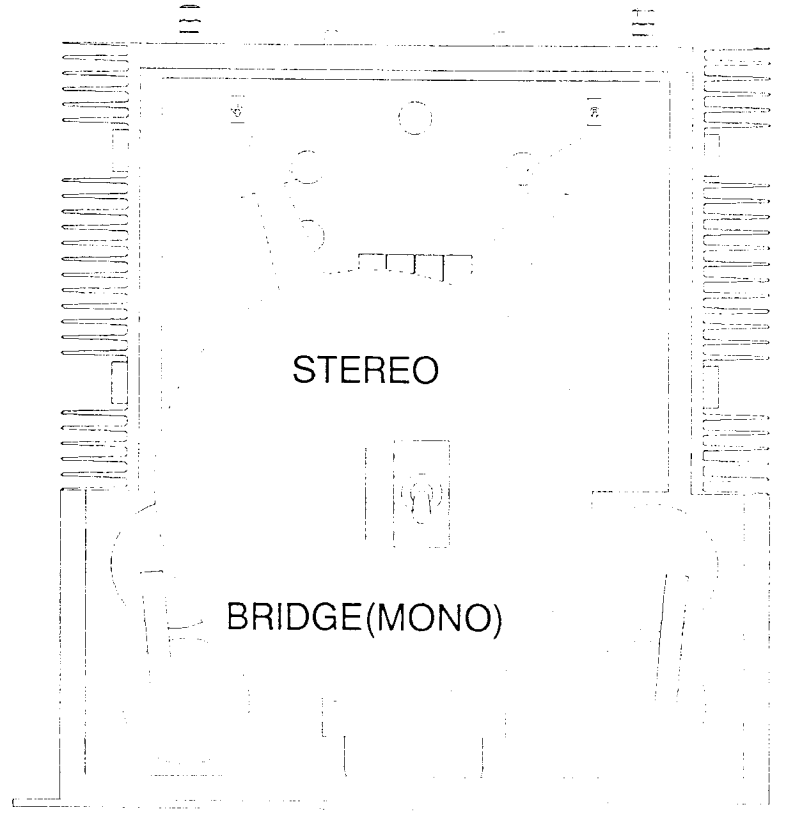
Step 2. Disconnect all speaker and input cables from your SA-20.

Step 3. Remove the top cover from your SA-20.

Step 4. There are two small toggle switches in the amplifier, located on the circuit board, at the rear of the amplifier. Flip both of these switches to the BRIDGE(MONO) position.

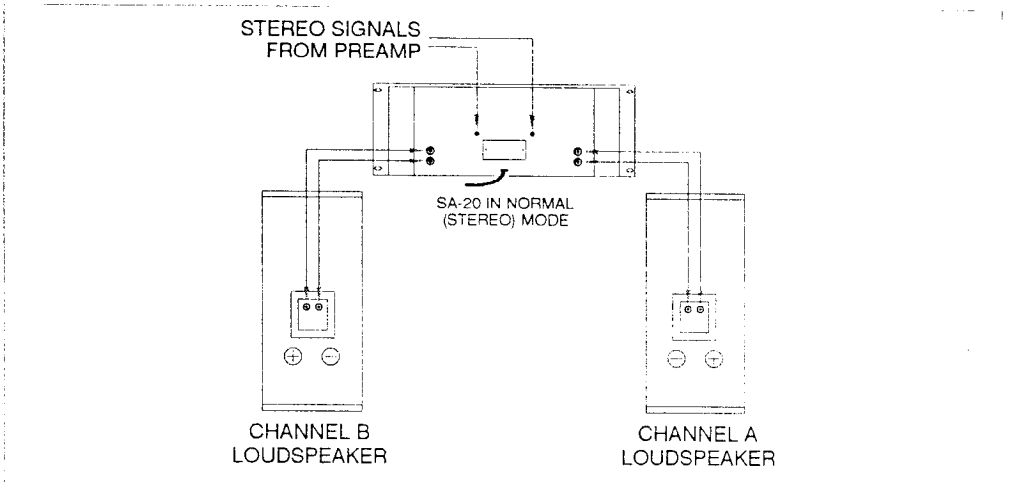
Step 5. Replace the top cover.

Step 6. Repeat steps 1-5 for your other SA-20 amplifier.

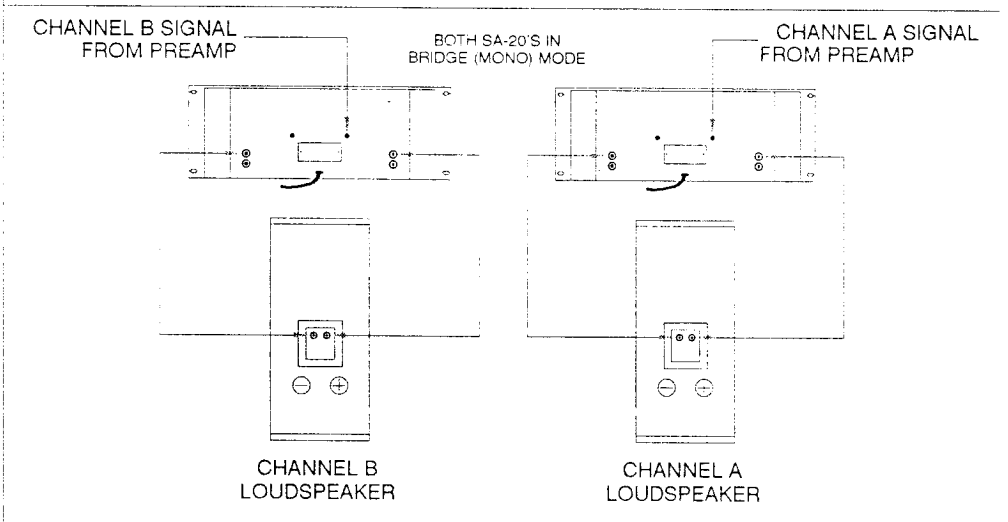


Connections To The Bridged Mono Amplifier.

Since this is now a monophonic amplifier, you will be using only one input cable and one speaker per amplifier. The following instructions apply to both the Right and Left Channel amplifiers.



CONNECTING AN SA-20 FOR NORMAL STEREO OPERATION



CONNECTING THE SA-20'S FOR BRIDGED DUAL-MONO OPERATION

Step 7. Connect the input cable to the "Channel A" input jack on the amplifier.

Step 8. Connect your speaker's "HOT "lead to the amplifier's Channel "A" RED speaker binding post. (The "HOT" lead is the lead that connects to the speaker's RED or "+" terminal.)

Step 9. Connect your speaker's "MINUS" lead to the amplifier's Channel "B" RED speaker binding post. (The "MINUS" lead is the lead that connects to the speaker's BLACK or "—" or "GROUND" terminal.)

Step 10. Now, make the connections on your second amplifier exactly the same way.

Double-check all connections. If everything seems to be O.K., you may now turn ***ON*** your SA-20's.

TUBE REPLACEMENT

The average tube life expectancy for the SA-20 is 3 or more years. When replacing a tube in your SA-20, be certain that you replace it with an exact type as indicated in the *Specifications* section of this Owner's Manual. Unless you know exactly what you are doing, ***any attempt to replace a tube with a type other than specified will void your warranty.***

How We Choose Our Tubes.

We get numerous suggestions from many people about different brands or types of tubes to use. You may have found what you consider to be an excellent 6DJ8-type tube. FYI, these are the things we look for when we buy tubes:

1. Large quantities available.
2. Good sound.
3. Excellent yield, (a large percentage are quiet enough for use in audio electronics).
4. Reliable operation.

It is very difficult to satisfy all four points. Some brands have great sound and large quantities available, but only 1-2% are useful to us due to high microphonics or noise level. Some others are quiet and sound good, but we can only find 200 of them (we purchase about 18,000 to 20,000 tubes each year). Some brands are plentiful, have good sound and a high yield at first, but only last about 1 to 6 months before they become noisy, and since we have about 6500 amplifiers and amplifiers being used by customers at this time of writing, long life is very, very important to us. Any brand of tube that meets all four criteria will be considered for use in Counterpoint products.

How We Test Our Tubes.

New tubes are aged for 160 hours. Then they are plugged into an Audio Precision™ computer-aided tester and measured. At this point we are checking for noise, noise stability, and microphonics (*"ringing"*). A Pascal program with over 2,500 lines of code sorts them into seven categories ranging from very, very good to garbage. The very, very good tubes are possible candidates for phono sections, the next five categories may be used in less critical applications, and the garbage tubes are good for nothing. Too light for paperweights.

These tubes are then installed into new Counterpoint products and the noise is re-checked, the microphonics are re-checked, and distortion and signal amplification are measured. A large percentage of tubes are rejected again. We then age the entire product, with its new tubes, for 48 hours (in a very hot room) and then everything is checked again. Then, after the top and bottom covers, front face panel and knobs have been assembled onto the product, it is listened to and checked for sound quality, noise and microphonics again. All together, by the time you have received a Counterpoint product, its tubes have had over 200 hours of use and have undergone 35 individual tests and measurements.

Where to Obtain Replacement Tubes.

There are a number of sources for the tubes used in the SA-20. However, most of the different makes of tube typically range from fair to poor. We have evaluated a broad sampling of the tubes manufactured in, or imported into, the U.S., and feel that the brand of tube we use gives the best sonic performance. If you wish to preserve the sonic characteristics of the SA-20, be certain to have your dealer contact Counterpoint, or contact Counterpoint directly, and obtain your tubes from us. We will be certain that your replacement tubes operate perfectly in an SA-20 by testing them in an SA-20. Other suppliers of tubes do not offer this service.

When requesting replacements, please specify where the tube is located in your SA-20 (V1, V2, V101, V102, V5 & V6). These designations are printed on the unit's circuit board, beside the tube sockets.

Tube Life.

The SA-20 has been conservatively designed. Therefore, you should get thousands of hours of use before tube replacement becomes necessary. Some indicators of failing tubes are a loss of highs or lows, inadequate gain, excessive noise or an increased amount of distortion.

BEFORE REMOVING TUBES FROM YOUR SA-20, BE CERTAIN THAT IT HAS BEEN DISCONNECTED FROM THE AC WALL RECEPTACLE FOR AT LEAST ONE HOUR TO ENSURE THAT INTERNAL HIGH VOLTAGES HAVE DRAINED TO A SAFE LEVEL.

Before inserting a tube into its associated socket, be certain the tube pins are completely straightened. This will prevent possible damage to either the tube or the socket. Be very careful during this procedure as there is only one way a tube can be inserted into its socket without causing damage.

GETTING TO KNOW TUBES AND YOUR SA-20

Short and Long Term Reliability.

Sometimes people expect too much from these complex, fragile little devices. Every time power is applied to a tube it heats up. Filaments reach 1200 degrees K. Internal parts heat and shift, sometimes causing bits of cathode material to crack loose. When the tube is turned OFF, everything shifts again. High noise levels can be due to impurities on the grid wires or cathode plating. Sometimes, after a tube has been used for some time, impurities can be "uncovered", and cause the noise level to increase. Like a loose shingle on a house, a flake of cathode material can lift in the electron *"wind" and cause noise instability (sputter).*

Some of these events can come and go, or only occur during the first 30 minutes after the tube has been switched on. Others may get worse as time goes on. At Counterpoint, we age the tubes before we test them. This puts a few hours onto the tube, but there is no way we can predict what they will do a week or a year after they leave the factory. And if we do a *lifetime* aging process (maybe 3 years?) we couldn't sell the tube because it would then be an old tube.

Why Are Some Tubes Bad by the Time You Receive Them?

You've just brought your SA-20 home, and the first time you listened to it you noticed that you had a noisy tube. Why? It's a new unit, Counterpoint won't ship anything until it has been measured and listened to, and yet you have a noisy tube. The reason is shipping vibration, plain and simple. While we do all that we can to protect a tube from shocks and breakage, there is very little that can be done to keep truck and airplane vibrations from shaking the tube for hours. A stray particle of cathode coating material can shake loose and cause noise instability. The grid wires (which are thinner than human hair) can shift and become microphonic (like a guitar string). The next time you have a damaged tube, break it open (in an old towel) and see how it is constructed. Dissect it and notice how fragile all the parts are. These are the simple facts of tube construction and there is nothing you, we, or the military can do about it.

A tube's insides are far more fragile than the insides of a light bulb. In a light bulb, all the manufacturer has to worry about is long life and good light output. It doesn't matter if the filament wire is leaning to one side, or if the coating of the filament has some loose flakes, the bulb will work. But a tube has about 1,000 times the requirements to operate satisfactorily. Everybody knows that if you shake a light bulb briskly for about 10 minutes there is a good chance that the filament might break, making the bulb useless. The same concept applies to a tube used for audio, but to a far larger extent.

Dealing with Tube Problems, and the Secret To A Happy Life With Tubes.

Problem 1: Tube noise when the unit is first turned on. Tubes need a chance to warm up, to stabilize, so that they can settle down and perform the way that they did at Counterpoint. To eliminate this problem and for greater tube stability we recommend that the SA-20 be left in the ON position at all times. If you are the type of person who will be annoyed with tube noise you really should just leave the unit ON.

Problem 2: Tube noise later in life. It's going to happen. But, the longer a tube stays quiet, the longer it is likely to stay quiet. If one tube goes sour in an SA-20, that's three out of the four tubes inside an SA-20 that are proving themselves trustworthy. Replace the bad tube.

It really boils down to education about tubes in an audio application. Equanimity. Poise and tranquility. If a tube becomes noisy or microphonic, it is not a failure of the electronics! Don't get upset, just replace the tube. A bad tube does not indicate that the unit is defective, it simply indicates that the tube is bad.

There are times when it is appropriate to have an entire appliance replaced . . . and times when a simple plug-in parts replacement is all that is needed. People won't send a lamp back to the factory simply because the light bulb burned out. There is no reason to do so with tube audio product.

Understanding about noisy tubes, microphonic tubes and tubes with noise instability (sputter) will make troubleshooting vacuum tube electronics much easier.

Some folks expect tubes to behave like transistors. *They will not.* Guaranteed. They need to be worked with. Attention, patience and knowledge are important qualities when dealing with vacuum tubes.

Tubes are not perfect, *but they **DO** sound great.*

CARE

Be careful not to allow foreign materials to enter the SA-20 through the ventilation openings on the top. Do not insert an implement of any nature into these openings. To avoid potential electrical shock, do not operate the SA-20 in a damp, rainy or moisture-filled environment and never operate the SA-20 with its top cover removed.

Remember, the faceplate of your SA-20 is manufactured from an aluminum alloy which is an extremely soft metal. It cannot withstand the careless use of tools during installation into a cabinet or rack.

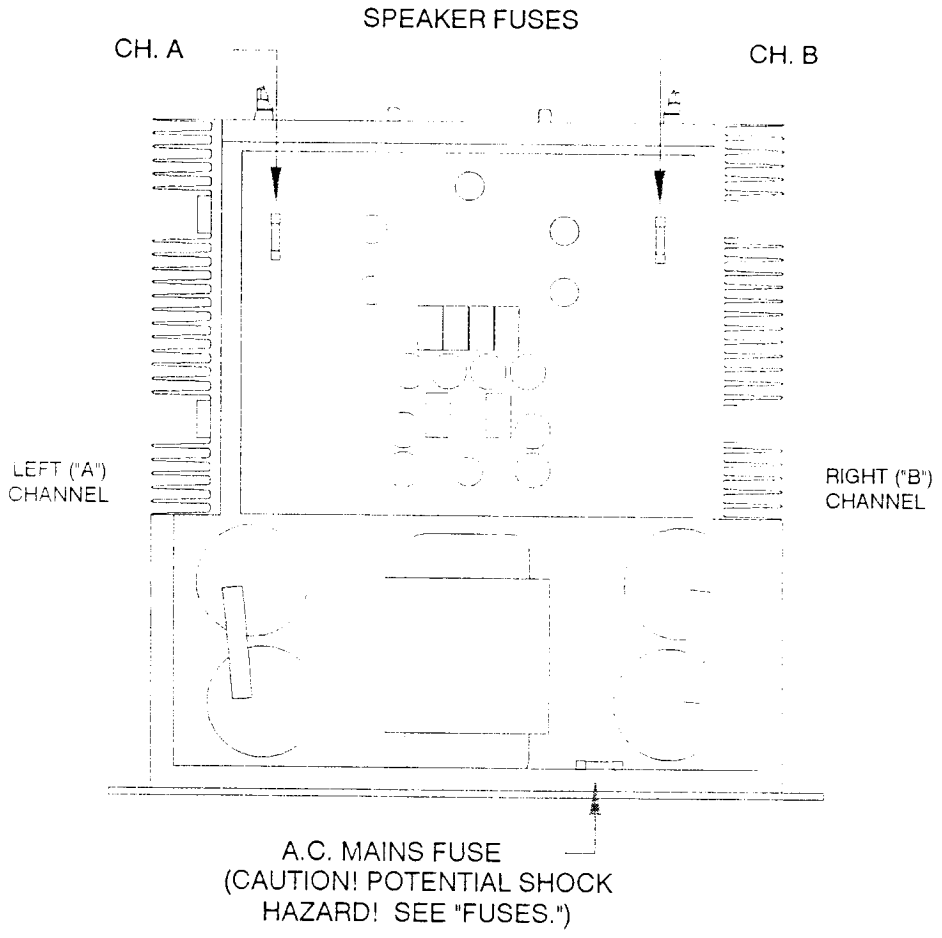
When cleaning the exterior of your SA-20, the direct use of dusting sprays, abrasive cleaners and particularly alcohol should not be used. At Counterpoint, detail cleaning of all metal surfaces is done using Windex™ spray glass cleaner or diluted ammonia solution. However, because the formulas for cleaners of this type vary, or change without notice, ***Counterpoint will not assume responsibility for the results obtained with any particular product.***

FUSES

A.C. Mains Fuse. This fuse is located inside the SA-20, behind the front panel. Refer to the drawing below. If this fuse "blows" it is most likely an indication of a fault in the SA-20. However, it is possible that the fuse itself may have been faulty, so you may wish to try a new one before you call your dealer.

CAUTION! HAZARDOUS VOLTAGES!

Before replacing this fuse, be certain that the SA-20 is disconnected from the wall A.C. receptacle. For SA-20 amplifiers operated at 117V, 60Hz (United States) the replacement value of this fuse is 10 Amp "Slow Blow." Use of a larger fuse can void your warranty.



Speaker Fuses. The Right and Left channel speaker fuses are located on the printed circuit board, as shown on the below drawing. Electrically, the fuses are between the amplifier and your loudspeaker, and are 6 Amp "Fast Blow" fuses.

These fuses are intended to protect your loudspeakers from damage. If one (or both) of your speakers should suddenly stop playing while listening to loud music it is likely that you have blown a speaker fuse.

The current rating of these fuses is a compromise: a bigger fuse sounds better, but will not protect fragile loudspeakers should a fault condition (such as forgetting to turn off the SA-20 when changing input interconnects) occur. If you own fairly sturdy speakers the 6 Amp ratings should work fine. Low impedance loudspeakers require more current to operate. However, if your speakers are fragile(common with lighter "faster" tweeters), or you are concerned about damaging a speaker with difficult to obtain replacement drivers you may wish to consider using a smaller fuse.

Under no circumstances should you use a heavier or slower fuse than the original value. We will not accept responsibility for any damages to your loudspeakers. (As an aside, the manufacturer of your speakers is the best source of information regarding the proper value for a speaker fuse — he knows the characteristics of the drivers and crossovers he uses.)

When replacing either of the SA-20's speaker fuses, always turn off the SA-20 and wait at least five minutes to allow the internal voltages to drain to a safe level. Failure to do so can not only give you a nasty shock, but you may drop the fuse inside the amplifier and cause an electrical short which may damage the amplifier.

WARRANTY INFORMATION. READ ME.

Your Counterpoint SA-20 Amplifier was engineered and built by dedicated people, with manufacturing techniques designed to achieve the highest standards available in the industry. In addition, each Counterpoint SA-20 receives 100 hours of tube burn-in and tubes match-up, for proper operation. Each Counterpoint SA-20 Amplifier undergoes rigorous testing procedure and has been checked twice by Audio Precision™ Computer-Aided Testing equipment, to catch any failure-prone devices, or components not up to spec which may have not revealed themselves during the breakdown tests. As a final step, each and every unit is listened to before it is shipped out from Counterpoint.

The Standard 90 Day Warranty

We Stand Behind Our Products With The Following Warranty

Counterpoint hereby warrants that it will repair or replace, at its option, any part of the SA-20 Amplifier with which this warranty is enclosed which proves defective by reason of improper workmanship and/or material, without charge for parts, labor, and tubes for a period of 90 Days. This warranty period commences on the date of original purchase by the buyer.

When Warranty Service Is Needed.

To obtain service under this warranty you must return your Counterpoint SA-20, properly packaged in its original container, to the nearest authorized Counterpoint dealer from whom the product was purchased. Any postage, insurance and shipping costs incurred in presenting or sending your Counterpoint SA-20 for service are your responsibility. However, Counterpoint will return the product via prepaid, insured freight. Method and carrier to be determined solely by Counterpoint Electronic Systems, Inc.

The Dealer's original bill of sale or other satisfactory proof of the date of the original buyer of your Counterpoint SA-20 must be made available to obtain service under this warranty.

The warranty applies only if your Counterpoint SA-20 fails to function properly under normal use and within the manufacturers's specification. Under no circumstances will the following be included as warranty coverage:

- 1. Any Counterpoint SA-20 Amplifier not operated in agreement with the instructions contained in the owner's manual.
- 2. Any resulting damage of any nature.
- 3. Any Counterpoint SA-20 Amplifier which, in our strict judgement, has been repaired, altered or modified by any facility or personnel not authorized by Counterpoint Electronic Systems, Inc.
- 4. Any Counterpoint SA-20 Amplifier which, in our strict judgement has been subject to neglect, abuse, accident, tampering, or has had its serial number removed or defaced.

This warranty gives you detailed legal rights. You may also have other rights which are inherent within your own state.

Direct shipments to the factory will not be accepted without a Counterpoint Return Authorization Number ("RA").

Be Prepared! Counterpoint will need the following information for warranty authorization:

1. The Model Number.
2. The Serial Number.
3. Your Name, Address, and a daytime phone number.

If your SA-20 is returned for warranty repair or general repair and Counterpoint finds it to be not defective, it will be returned with a **handling fee of $125.00**, plus return shipping charges. **Therefore,** be very certain that any problem you may be experiencing is actually due to a failure of the amplifier. If there are unusual circumstances surrounding the failure, please describe them clearly in an ***accompanying note so we may more easily duplicate the conditions.***

If an SA-20 Amplifier is shipped to the factory for repair or update and is found to be packed in other than the original shipping materials, Counterpoint will re-package the unit in a factory carton for return shipping. ***You will be charged a nominal fee for the new material***

Warranty Service Outside The U.S.A.

To those Counterpoint products whose customer purchase was made outside the United States and its territories, warranty conditions will be extended by the importing distributor, which may be different from those warranty conditions specified above. Warranty service, if needed, is the sole responsibility of the importing distributor or foreign dealer.

If a Counterpoint product is removed from the country in which the consumer purchase was made, Counterpoint distributors and/or authorized dealers in any subsequent country are not obligated by the terms of this warranty. Any repairs under the terms of this warranty will be made at the discretion of the distributor or dealers.

The Three Year Extended Warranty

How To Extend The Limited Warranty To A Three Year Warranty.

The SA-20 automatically comes with the above 90-day Warranty. You can extend this to a three-year period by simply mailing us a photocopy of the Dealer's original bill of sale or other satisfactory proof of the date of the original buyer purchase of your Counterpoint SA-20. This will firmly establish authorized dealer, model number, serial number and ownership.

Please send a photocopy of the sales receipt to the following address:

Counterpoint Electronic Systems, Inc.
2610 Commerce Drive
Vista, California 92083
Atten: Warranty Registration

You will receive, via return mail, the Optional Three Year Warranty certificate for your records.

The Optional Three Year Warranty covers all parts and labor. It excludes vacuum tubes. The vacuum tubes are covered under the Standard 90 Day guarantee.

Transfer Of Warranty

If the original owner established warranty for your Counterpoint SA-20, you will need to provide the following paperwork:

- 1. A bill of sale from the seller to the new owner will firmly establish a transfer of ownership.

If the original owner did not establish warranty and you wish to establish a warranty for y Counterpoint SA-20, you will need to provide the following paperwork:

- 1. The original bill of sale from the Audio Dealership to the first owner.
- 2. Any and all subsequent bill(s) of sale from owner to owner.

All transfer of ownership paperwork should be sent to the following address:

Counterpoint Electronic Systems, Inc.
2610 Commerce Drive
Vista, California 92083
Atten: Warranty Transfer

You will receive, via return mail, an Optional Three Year Warranty certificate for your records.

Notification Of Product Improvements

Because Counterpoint always strives to improve existing products through ongoing research into new technology and materials, we reserve the right to incorporate design refinements without notice or obligation. For this reason, any current Counterpoint product may differ in some respects from its published description but it will always equal or exceed the performance of the original design.

Whenever possible, these design modifications will be incorporated in prior units. All owners will be notified, through the mail service, of the modification via their product warranty registration. Design modifications will be made through any authorized Counterpoint dealer or through Counterpoint, for a reasonable charge.

It is Counterpoint's policy to defer to the consumer whenever a reasonable doubt exists. However, freight charges and handling fees will be billed for any units or parts returned under warranty and found by Counterpoint to be operating in accordance with their specifications.

Warranty Extension Program

Counterpoint offers a warranty extension program to all owners with warranty on file. Once the Three Year Warranty has expired, you will be notified of your option to purchase (at a reasonable cost) an additional Three Year Parts and Labor Warranty (excluding tubes).

BEFORE YOU CALL YOUR DEALER OR THE FACTORY: TROUBLE-SHOOTING.

Important!

If your SA-20 is returned for warranty repair or general repair and Counterpoint finds it to be not defective, it will be returned with **a handling fee of $125.00**, plus return shipping charges. So be thorough and careful with your system set up and troubleshooting.

Assistance From Your Local Dealer Or Dealer Of Purchase.

Your Counterpoint Authorized Dealer is your best source of assistance — he is in a much better position to help because he knows you, your needs and your system. In addition, your Dealer is backed up by the special support resources within Counterpoint.

Trouble-Shooting. A Quick Check Of The Obvious.

- Is the AC power cord properly attached?
- Are the tubes inserted properly into the respective tube sockets?
- Is the power switch in the ON position?

Trouble-Shooting. A Quick Check Of The No-So-Obvoius.

Tubes light but the LED does not.		Broken LED, broken wire or bad connection to the circuit board, replace or correct as necessary.
No Sound. Tubes and LED do not light.		Check to see if the A.C. Mains fuse has blown. Replace fuse with an exact fuse value.
Speaker Hum.		1. Check for electrical ground loop. Only one component in your system should be 3-prong grounded to the AC receptacle. Use "ground cheaters" to lift all but one component from AC ground. 2. With the SA-20 turned OFF, disconnect the input connections from the preamplifier and replace with shorting pins. Turn the SA-20 back on. If hum is eliminated, connect the components back to your system one at a time until the problem re-occurs. Contact the manufacturer of the component and inform them of your problem and troubleshooting technique. 3. If the hum remains with the SA-20's input shorted, then the humis being generated within the SA-20.
Rushing, Hissing or Rumbling Noise.		Possibly a bad tube. 1. In most cases, leaving the unit ON will eliminate the noise. 2. If time doesn't cure the problem, replace the bad tube. If the noise is audible in one channel only, swap tubes from channel to channel (see tube chart for proper location). If the problem goes away, you've taken all the corrective action that needs to be done. If the problem travels to the other channel you need to determine which tube is the noisy one (use the eraser end of a pencil to gently tap the tube to determine which tube is feeding which speaker). If the right speaker has the tube noise, and you hear the tapping from the right speaker when you tap (for example) V1, then V1 is the culprit. ***BE CERTAIN THAT YOU PUT THE TUBES BACK INTO THEIR ORIGINAL LOCATION.*** ***Contact your Counterpoint dealer and tell him which tube (V1, V2, V101 or V102) you're having trouble with. He can obtain a new one for you.***

"Pinging" or "Ringing" sound when you tap the front panel.	All tubes are microphonic to some extent. If you feel that the level of microphonics is unacceptable, or it is steadily getting worse, you should contact your Counterpoint dealer to obtain a new tube. But first ascertain which tube is the culprit. 1. The easiest way to determine the ringing tube is to remove the top cover and, while listening, use the eraser end of a pencil to gently tap the tubes. Contact your Counterpoint dealer to obtain a replacement tube, and be certain to tell him which tube you need.
Mechanical hum or buzzing emanating from the chassis.	1. The power transformer in the SA-20, like all transformers, vibrates. The noise should typically not be audible when you are more than a foot away from the amplifier. If the hum is much, much louder there may be a problem. But first be certain that your SA-20 is not resting on a surface that might act as a sounding board and amplify the noise, such as a wooden shelf. You can mechanically isolate the amplifier from the surface by using three or four Sorbothane "feet" (available from your dealer or AudioQuest in San Clemente, Ca.), or an equivalent product. Do not use soft foam rubber or carpeting which may block the ventilation holes on the underside of the amplifier.

TECHNICAL DESCRIPTION

The SA-20 is a "hybrid" power amplifier which uses vacuum tube triodes for voltage amplification and output stage drivers, and eight 125 Watt power MOSFETs (Metal-Oxide Semiconductor Field-Effect Transistors) per channel for current amplification. We have chosen this technology because 1) it has been our experience that for voltage amplification triodes offer the most satisfying sound, and 2) power MOSFETs — when operated correctly — are capable of very transparent sound and have the not inconsiderable benefits of being easy for the tubes to drive without using additional stages and can deliver substantial amounts of current to a loudspeaker.

It is our contention that loudspeakers require healthy amounts of current in order for the music to remain relaxed and open during musical peaks. In addition, during the development of the hybrid technology represented by the SA-20, it became obvious that the sound quality of this family of amplifiers could be sweeter and more natural-sounding if the output stage was not included in any kind of feedback loop. For this reason this amplifier uses American made MOSFETs normally associated with switching power supplies because their output impedance is typically an order of magnitude lower than the Asian-made devices normally associated with audio power amplifier output stages and, thus, can easily deliver

more current with considerably less current-limitation nonlinearities and without the need for feedback to make the output stage "look like" a lower source impedance.

The output stage consists of four N-channel and four P-channel MOSFETs (respectively paralleled) in a complementary-symmetry Class-AB configuration. A high bias current is required to broaden the amplifier's Class-A range, eliminating switching distortion and which accounts for the fairly high heatsink temperature. Bias is controlled by a Vbe multiplier.

The output stage is driven by a Constant-Current-Source fed cathode-follower consisting of 1/2 of a 6DJ8 triode as the current source, and 1/2 as the cathode follower. This design achieves far greater linearity than the usual resistor-loaded approach. This stage is capacitor coupled to the device gates. The source impedance of this stage is sufficiently low enough to supply adequate current for repaid charging and discharging of the MOSFET gate capacitances.

Voltage gain is supplied by two cascaded 6DJ8 common cathode stages, utilizing a mixture of fixed and cathode bias techniques. There is no overall feedback loop. The tube section has a feedback loop wrapped around it, and the MOSFETs are allowed to run free with no restraints.

During bridge (mono) operating, one channel of the amplifier is operated normally, and gets its input directly from the input jack. The other channel receives its input from a high-linearity, unity-gain phase inverter, and so is driven out of phase with the first channel.

To prevent turn-on transients from damaging loudspeakers, the gates of the output stage MOSFETs are clamped to ground during the warm-up period. This technique eliminates the need for relay contacts in the speaker's signal path and contributes to the musicality of the amplifier. If for any reason, the AC power to the amplifier is interrupted, the timer circuit re-sets itself, and another 90-second interval must pass before operation of the amplifier becomes possible.

TYPICAL SPECIFICATIONS

Tube Complement

4-6DJ8, Audio Amplification. V1, V101, V2 & V102.
1-6DJ8. Phase Tube. V5.
1-6CA4, Rectifier. V6.

Typical Electrical Specifications

Gain. (voltage)
SA-20 Stereo: 29dB.
SA-20/20 Bridge Mono: 35dB.

R.M.S. Power Output. (120 VAC Line)

Configuration	8 ohm load	4 ohm load	2 ohm load	1 ohm load
SA-20 Stereo:	220W	420W	640W	730W
SA-20/20 Bridged Mono:	600W	700W	N.R.	N.R.
			N.R. = Not Recommended	

Peak Power Output. (120 VAC Line)

Configuration	8 ohm load	4 ohm load	2 ohm load	1 ohm load
SA-20 Stereo:	310W	590W	900W	1000W
SA-20/20 Bridged Mono:	840W	980W	N.R.	N.R.
			N.R. = Not Recommended	

Peak Output Current.
(0.1 ohm load, 1kHz switched ON for 20mSec, OFF for 480mSec)
50 Amperes.

Frequency Response.
8 ohm load: <1.2Hz to 200kHz.
8 ohm/8u resistive/capacitive load: <1.2Hz to 32kHz.

RiseTime.
8 ohm load : 0.6uSec.
8 ohm/8uf resistive/capacitive load: 5.0uSec.

Distortion. (THD)
SA-20 Stereo:
200W r.m.s.: <0.5%.
10 Wr.m.s.: <0.1%.
1W r.m.s.: <0.05%.

SA-20/20 Bridged Mono:
600W r.m.s.: <0.5%.
10W r.m.s.: <0.10%.
1W r.m.s.: <0.08%.

Intermodulation Distortion.
1W, 8 ohms
CCIF: 0.025%, DIM100: 0.02%, SMPTE: 0.018%
100W, 8 ohms
CCIF: 0.2%, DIM100: 0.4%, SMPTE: 1.5%

Signal-To-Noise.
(input shorted 400-80kHz unweighted, stereo configuration 8 ohm load, 1W ref.)
-84dB.

Output Impedance.
0.12 ohm, typ.

Damping Factor.
6 (ref 8 ohm).

Input Impedance.
100K ohm, 100pF.

Signal Polarity.
("Absolute Phase")
Non-inverting.

Power Requirements.
U.S. Domestic 120VAC operation, scale other A.C. Mains voltages accordingly:
260W, idle.

Replacement Fuse Value.
A.C. Mains Fuse (U.S., 120VAC):
10A "Slow Blow,"
Speaker Fuses and Rail Fuses:
6A AGC.

Dimensions.
Front Panel: 19 inches (480 cm) wide, 4.46 inches (11.3 cm) tall.
Front-to-rear dimension: 19 inches (480 cm).

Weight.
69 pounds (unit weight).
72 pounds (shipping weight).